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**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking Regarding Policies,
Procedures and Rules for Development of
Distribution Resources Plans Pursuant to Public
Utilities Code Section 769.

R. 14-08-013
(Filed August 14, 2014)

**COMMENTS OF THE NATURAL RESOURCES DEFENSE COUNCIL (NRDC) ON
THE ORDER INSTITUTING RULEMAKING REGARDING POLICIES,
PROCEDURES AND RULES FOR DEVELOPMENT OF DISTRIBUTION RESOURCES
PLANS PURSUANT TO PUBLIC UTILITIES CODE SECTION 769**

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September 5, 2014

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The Natural Resources Defense Council (NRDC) respectfully submits these comments on *The Order Instituting Rulemaking Regarding Policies, Procedures and Rules for Development of Distribution Resource Plans Pursuant to Public Utilities Code Section 769* issued on August 20, 2014. These comments are filed and served pursuant to Rules 6.2, 1.9, and 1.10 of the California Public Utilities Commission's (CPUC or Commission) Rules of Practice and Procedure. NRDC is a non-profit membership organization with a long-standing interest in minimizing the societal costs of reliable energy services required by a healthy California economy. Distribution plans will be a critical component of the Commission's implementation of the loading order and of achieving California's clean energy and climate change goals cost-effectively. NRDC generally supports the OIR's determination of category, need for hearing, and schedule, and provides the following recommendations in response to the OIR's proposed questions.

In summary, our comments and recommendations include:

- Utilities should account for all distributed energy resources in their Distributed Resource Plans (DRPs), including energy efficiency, energy storage, electric vehicles, and demand response technologies, in addition to distributed renewable generation resources.
- DRPs should include transparent and accessible information on optimal locations for distributed energy resource (DER) investments—based on the various electrical products and characteristics needed in particular local capacity areas, substations, and circuits—in addition to granular information on already existing or planned DER installations.
- Among the values considered in the development of a calculation methodology for optimal locations of DERs, we recommend inclusion of actual avoided costs at the substation or feeder levels. These include avoided long-term distribution and transmission investments, avoided investment in non-DER energy resources to meet local capacity resource needs, any

avoided flexible capacity resource costs, avoided line losses, and avoided environmental and land-use costs.

- To facilitate better coordination among existing DER proceedings, the Commission should give careful consideration to incorporating locational values found in the DRPs into existing cost effectiveness tests in current proceedings, which presently only incorporate avoided costs from DER investments spread generally across a service territory.

1) What specific criteria should the Commission consider to guide the IOUs' development of DRPs?

NRDC recommends the Commission require Investor Owned Utilities (IOUs) to design their Distribution Resource Plans (DRPs) to

- optimize the reliability, flexibility, and resiliency of the distribution and transmission grids
- holistically value costs and benefits by comparing investments in local distributed energy resources to actual avoided grid investments (including generation, transmission, and distribution), and
- achieve California's long-term climate and clean energy goals.

We emphasize that, as defined by AB 327, distributed resources¹ (or distributed energy resources, DERs) include energy efficiency, energy storage, electric vehicles, and demand response technologies in addition to distributed renewable generation resources, and accordingly recommend incorporation of each of these technologies in utilities' DRPs.

Achieving the above criteria will likely require:

1. *Transparent and accessible information on optimal locations for DER investments*

This information should be based on the various electrical products and characteristics needed in particular local capacity areas, substations, and circuits. We recommend considering the information contained in the most recent utility Renewable Auction Mechanism (RAM) interconnection maps² and maps of locational effectiveness factors developed by the California Independent System Operator (CAISO) in conjunction with utilities.³

¹ California Public Utilities Code section 769 (AB 327) uses the term "distributed resources" and the CPUC OIR uses "distributed energy resources." We assume the two terms are interchangeable.

² D. 10-12-048 directed IOUs to provide the "available capacity" at the substation and circuit level in map format, with updates at least once a month.

³ In Track 1 of the 2012 LTPP process, SCE worked with CAISO to identify locational effectiveness factors for non-generating substations for the identified limiting contingency, and provided this

2. *More granular information on existing and future Distributed Energy Resource (DER) installations*

We recommend increasing the granularity of information on already existing and planned DER installations by location and load-shape. This will greatly enhance system and grid planners' ability to rely on DER for long-term planning needs, thereby reducing the costs and risks of over-procurement. For example, for energy efficiency (EE) resources, we recommend utilities start by incorporating existing data and methods, such as the allocation methodology developed by the CEC to estimate energy efficiency installations down to specific busbars within a service territory.⁴ We also recommend improving these estimates by tracking where actual energy efficiency measures are installed and in particular, by measuring load shapes resulting from various efficiency installations. Increased information on actual EE and other DER installations will enable utilities to project more accurate net load shapes by substation in each season, which will in turn facilitate more cost-effective DER investments. Over time, this information should all be included within utilities' DRPs.

3 / 4) What specific criteria/values should be considered in the development of a calculation methodology for optimal locations of DERs?

Actual avoided costs at the local level should be considered in the development of locational values for DERs. These include avoided long-term distribution and transmission investments, avoided investment in non-DER energy resources to meet local capacity resource needs, avoided flexible capacity resource costs, avoided line losses,⁵ and avoided environmental and land-use costs.

We also recommend consideration of the relative costs of integrating DERs in different locations. To the extent existing distributed generation goals or mandates exist (e.g. Governor Brown's distributed generation goal of 12,000 MW and RAM auctions), it is important to site

information in map format. SCE, Track 1 Procurement Plan of Southern California Edison Company Submitted to Energy Division Pursuant to D. 13-02-015, (August 2013). Available at: https://www.sce.com/wps/wcm/connect/0a312536-5ba4-4153-a3bd-0859e15badeb/TrackI_SCELCRProcurementPlanPursuanttoD1302015.pdf?MOD=AJPERES.

⁴ The busbar allocation methodology for allocating energy efficiency was adopted as part of long term procurement planning assumptions. See D. 12-12-010.

⁵ Estimates could be drawn from the California Energy Commission's study on transmission loss assumptions. See CEC, *A Review of Transmission Losses in Planning Studies*, (August 2011), available at: <http://www.energy.ca.gov/2011publications/CEC-200-2011-009/CEC-200-2011-009.pdf>.

these DERs in the most economic locations to minimize system costs. A 2012 study conducted by Southern California Edison (SCE) found the cost of interconnection, distribution, and transmission upgrades for approximately 4,800 MW of DG on SCE's distribution system could range from \$2.1 billion to a high of \$4.5 billion, depending on whether projects are optimally located, with even further reductions in cost possible if DG were distributed more uniformly along feeders and substations.⁶ These large variances in cost were confirmed by a CEC-commissioned study in 2013, which found the cost of DG interconnection and distribution upgrades alone could range from a low of \$0.9 billion to a high of \$2 billion (for the same 4,800 MW of DG on SCE's distribution system), depending on project size, location, and the amount of DG clustering on distribution feeders.⁷

Additionally, we urge the Commission to consider avoided impacts to land use from installation of DERs. The CEC-commissioned study on SCE's distribution system confirmed that integration impacts and costs are significantly lower when DG is installed in urban areas, where additional development has minimal impact on wild lands, waters, and the people and species that depend on them.⁸ California has expended a great deal of resources on its land use planning activities, particularly to identify renewable project locations/zones that are not only optimal from a resource perspective, but an environmental one as well. DERs can reduce land use conflicts from large-scale renewable generation and transmission and the associated time and cost of procuring permits (for wildlife, Certificates of Public Convenience & Necessity, etc.). Because investment in DERs can substantially reduce land use conflict and efforts required for future land use planning, we recommend utilities work with stakeholders and other agencies such as the California Energy Commission and the Office of Planning and Research to establish a value for avoided land use impacts.

Finally, as the problem of economic curtailment of renewables expands, some DERs (like energy efficiency, demand response, and storage) can re-shape load curves, and thus reduce the amount of that renewable curtailment. By increasing the capacity factor of those renewables

⁶ SCE, *The Impact of Localized Energy Resources on Southern California Edison's Transmission and Distribution System*, p. 34 (May 2012). Available at: http://www.energy.ca.gov/2013_energypolicy/documents/2013-08-22_workshop/SCE_Local_Energy_Resources_Study.pdf.

⁷ Navigant Consulting Inc., *Distributed Generation Integration Cost Study*, (November 2013), available at: <http://www.energy.ca.gov/2013publications/CEC-200-2013-007/CEC-200-2013-007.pdf>.

⁸ *Ibid.*

(through re-shaping of the net load curves) those DERs would allow California to meet its renewable targets (which are defined by energy generation, not capacity) with less renewable capacity, which translates into fewer environmental, economic, and land use costs.

7) What types of benefits should be considered when quantifying the value of DER integration in distribution system planning and operations?

Please see our response to questions 3 and 4.

9) What types of data and level of data access should be considered as part of the DRP?

We recommend the DRPs include data on local capacity needs and distribution/transmission congestion sufficient to target DERs to the most effective substations within the most constrained local capacity areas. The Renewable Auction Mechanism (RAM) interconnection maps and SCE's/CAISO's development of locational effectiveness factors⁹ provide useful starting points. Specifically, the RAM decision orders the utilities to provide "available capacity" at the substation and circuit level in map format, with updates at least once a month.¹⁰ We understand utilities have provided some of this information in map form, but urge the Commission and utilities to ensure the information is presented in a more accessible way, updated more consistently, and made searchable so DER developers are able to see areas they should target for development. For minimizing local capacity needs specifically, we recommend utilities publish locational effectiveness values across their service territories. In Track 1 and Track 4 of the 2012 Long Term Procurement Plan (LTPP) process, SCE worked with CAISO to identify locational effectiveness factors for non-generating substations for the most-recently identified limiting contingency, and provided this information in map format (see figure 1).¹¹

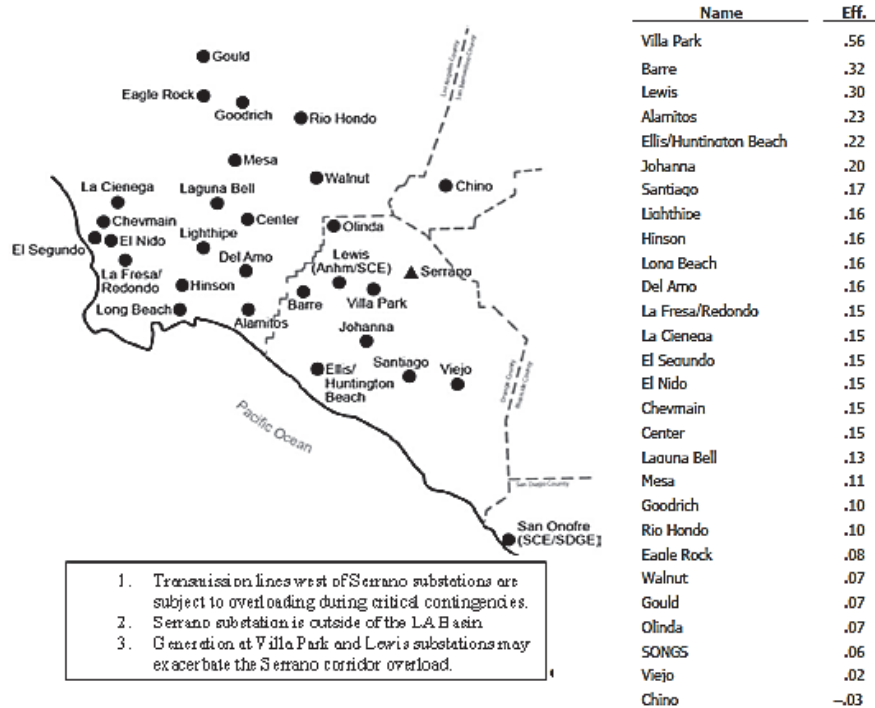
⁹ SCE, *Track 1 Procurement Plan of Southern California Edison Company Submitted to Energy Division Pursuant to D. 13-02-015*, (August 2013). Available at: https://www.sce.com/wps/wcm/connect/0a312536-5ba4-4153-a3bd-0859e15badeb/TrackI_SCELCRProcurementPlanPursuanttoD1302015.pdf?MOD=AJPERES.

¹⁰ D. 10-12-048 directed IOUs to provide the "available capacity" at the substation and circuit level in map format, with updates at least once a month.

¹¹ SCE, *Track 1 Procurement Plan of Southern California Edison Company Submitted to Energy Division Pursuant to D. 13-02-015*, (August 2013). Available at: https://www.sce.com/wps/wcm/connect/0a312536-5ba4-4153-a3bd-0859e15badeb/TrackI_SCELCRProcurementPlanPursuanttoD1302015.pdf?MOD=AJPERES.

Figure 1

*Indicative Locational Effectiveness Factors
Based on Mitigation of the West of Serrano Substation Constraint*



We likewise recommend the DRPs include transparent data on transmission, distribution and non-DER energy resource and flexibility resource costs. Furthermore, as feasible, the DRPs should include increasingly granular data on the type, location, and load shapes of installed DERs in addition to publishing information on the overall load shape by substation for each season.

10) Should the DRPs include specific measures or projects that serve to demonstrate how specific types of DER can be integrated into distribution planning and operation? If so, what are some examples that IOUs should consider?

To the extent uncertainty exists, we support the incorporation of specific measures or projects as part of utilities' DRPs. We recommend incorporating information gathered from SCE's preferred pilot into the DRPs. Another useful example would involve tracking the load shape and capacity changes resulting from targeting energy efficiency measures from utilities' general energy efficiency portfolio to the San Onofre Nuclear Generating Station (SONGS) region.

11) What considerations should the Commission take into account when defining how the DRPs should be monitored over time?

We recommend the Commission provide ample leeway for adjustments to the DRPs over time in order to account for changes to existing distributed energy resource programs and broader system changes as reflected by long term planning and flexibility models, transmission and distribution investments, and overall procurement authorizations.

12) What principles should the Commission consider in setting criteria to govern the review and approval of the DRPs?

The Commission should ensure adequate stakeholder input and transparency in the approval process for utilities' DRPs. Unlike the review process for San Diego Gas & Electric's procurement plan under Track 4 of the 2012 LTPP, we urge the Commission to allow for public and meaningful review of these distribution plans.

15) What, if any, further actions, should the Commission consider to comply with Section 769 and to establish policy and performance guidelines that enable electric utilities to develop and implement DRPs?

California Public Utilities Code section 769(b)(3) requires each electrical corporation's DRP to "propose cost-effective methods of effectively coordinating existing commission-approved programs, incentives, and tariffs to maximize the locational benefits and minimize the incremental costs of distributed resources." Effectuating this section will likely require incorporating locational values found in the DRPs into existing DER proceedings, thereby supplementing existing cost effectiveness tests which do not incorporate specific avoided costs from locationally targeted DER investments. Alternatively, the results of locational value calculations in utilities' DRPs will result in the creation of new procurement mechanisms for additional DERs outside of existing proceedings. The Commission should carefully consider the pros and cons of each alternative and ensure DER procurement reflects the locational values found.

CONCLUSION

NRDC respectfully requests that the Commission consider our recommendations in guiding the development of utilities' DRPs.

Respectfully submitted,

A handwritten signature in cursive script, reading "Maria Stamas".

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